

SPECIFICATION

TO ALL WHOM IT MAY CONCERN:

BE IT KNOWN THAT WE, JUN-ICHIROH FUJIMOTO, a citizen of Japan residing at Kanagawa, Japan, TAKASHI ARIYOSHI, a citizen of Japan residing at Kanagawa, Japan, YOSHINAGA KATO, a citizen of Japan residing at Kanagawa, Japan, HIROO KITAGAWA, a citizen of Japan residing at Kanagawa, Japan, YUICHI KOJIMA, a citizen of Japan residing at Kanagawa, Japan, LU BIN, a citizen of China residing at Tokyo, Japan, TETSUYA MUROI, a citizen of Japan residing at Kanagawa, Japan, TETSUYA SAKAYORI, a citizen of Japan residing at Kanagawa, Japan, YOSHIFUMI SAKURAMATA, a citizen of Japan residing at Kanagawa, Japan, and JUNICHI TAKAMI, a citizen of Japan residing at Kanagawa, Japan have invented certain new and useful improvements in

OFFICE INFORMATION SYSTEM HAVING A DEVICE WHICH
PROVIDES AN OPERATIONAL MESSAGE OF THE SYSTEM
WHEN A SPECIFIC EVENT OCCURS

of which the following is a specification:-

1 BACKGROUND OF THE INVENTION

 (1) Field of the Invention

 The present invention generally relates to
office information systems, such as copiers, facsimiles or
5 printers, and more particular to an office information
system having a device which provides a user (or a request
source) with an operational message of the office
information system when an specific event occurs.

 (2) Description of the Related Art

10 FIG. 8 shows an enclosure of an office
information system according to the related art. This
office information system is, for example, a copier, a
facsimile or a printer.

 In the office information system of FIG. 8,
15 a liquid-crystal-display (LCD) panel 101 is provided on
top of an enclosure 100, and an access door 102 is
provided at a lower portion of the enclosure 100. The
access door 102 is opened by the operator or user who
wishes to look into the internal components of the system
20 for the purpose of repair or maintenance.

 When a failure, such as paper jam or lack
of toner, in the office information system of the above
type takes place, an image indicating a failure location
in the system is displayed on the LCD panel 101.

25 FIG. 9 shows an image of a failure location

1 displayed on the LCD panel 100 of the office information
system of FIG. 8. In the example of FIG. 9, a paper jam
occurs in the system and a location "B3" of the paper jam
in the system is indicated in the displayed image.

5 FIG. 10 shows an internal structure of the
office information system of FIG. 8 when the access door
102 is opened and the internal components of the system
are looked into. As shown in FIG. 10, the office
information system includes, for example, a plurality of
10 components at respective locations A1, A2, B1, B2 and B3.

The user views the image on the LCD panel
100, opens the access door 102, and searches for the
location of the paper jam in the actual system
corresponding to the location "B3" in the displayed image.
15 If the location of the paper jam can be found, the user
performs a repairing or correcting operation on the
related component at the location "B3" so as to eliminate
the failure from the system.

However, in the office information system
20 of FIG. 8, a guidance message which helps the user to
recover the paper jam or lack of toner in the system is
only the image displayed on the LCD panel 101. Such a
message is often inadequate for the user to complete
failure-recovery operations on the system, and this makes
25 it difficult to efficiently carry out the failure

1 recovery.

For example, when the location "B3" of the failure indicated by the displayed image is a concealed place within the system, finding the actual component related to the failure in the system is difficult, or a considerable time and cost is needed to find it. When a certain preliminary operation must be formed to reach the related component at the location "B3" of the failure, the user is often unable to recognize the need of the preliminary operation from the displayed image only. Therefore, it is desirable that an office information system which ensures easy searching and recognition of a location of a failure in the system and provides the user with a failure-recovery operational message for efficient failure recovery is provided.

SUMMARY OF THE INVENTION

An object of the present invention is to provide an improved office information system in which the above-described problems are eliminated.

Another object of the present invention is to provide an office information system which ensures easy searching and recognition of a location of a failure in the system and provides a user with a failure-recovery operational message that allows efficient failure recovery

1 in the system.

Another object of the present invention is to provide an office information system which allows the setting of customized operational messages of the system appropriate for individual users and increases the operability of the system for the individual users by the use of the customized operational messages.

Another object of the present invention is to provide an office information system having a communication device linked to a remote terminal via a network for telecommunications between the system and the remote terminal, which safely returns, when an image from the remote terminal is received at the system but an error occurs in the outputting of a reconstructed image by the system, an error message back to the remote terminal.

Another object of the present invention is to provide an office information system having a communication device linked to a remote terminal via a network for telecommunications between the system and the remote terminal, which safely returns, when a specific request from the remote terminal is accepted at the system, an operational message related to image quality or sheet quality, back to the remote terminal.

Another object of the present invention is to provide an office information system which ensures easy

1 searching and recognition of a failure in the system by
using a result of a machine noise evaluation, and provides
a user with an operational message that allows efficient
failure recovery in the system.

5 Another object of the present invention is
to provide an office information system which ensures easy
recognition of lack of toner or lack of copy sheets in the
system by providing a user with a failure-detection voice
message based on a result of a self-diagnosis of the
10 system.

Another object of the present invention is
to provide an office information system which provides a
user with an increased operability in the setting of
operating conditions and operating condition changes to an
15 image forming operation being executed on the office
information system, and allows easy operating-condition
setting procedures for the user.

Another object of the present invention is
to provide an office information system which ensures
20 improved man-machine interface which allows a user to
easily recognize an operational error in the system.

The above-mentioned objects of the present
invention are achieved by an office information system
including: a path record storage device which stores a
25 plurality of path records related to components of the

1 system, each path record indicating a locating path needed
to reach a location of a specific one of the components in
the system when a failure of the specific one of the
components occurs; a failure location detecting device
5 which detects a location of a component in the system when
a failure related to the component occurs; a reached
location determining device which reads a path record from
the path record storage device when the location of the
failure is detected, and determines a currently reached
10 location in the system based on the path indicated by the
path record; and a message device which generates, when
the reached location is determined, an operational message
needed for recovering the failure at a subsequent location
of the path following the reached location.

15 In the office information system of the
present invention, the reached location determining device
reads a path record from the path record storage device
when the location of the failure is detected, and
determines a currently reached location in the system
20 based on the path indicated by the path record, and the
message device generates, when the reached location is
determined, an operational message needed for recovering
the failure at a subsequent location of the path following
the reached location. The office information system of
25 the present invention is effective in providing easy

1 searching and recognition of a location of a failure in
the system and in providing the user with a failure-
recovery operational message that allows efficient failure
recovery in the system.

5 The above-mentioned objects of the present
invention are achieved by an office information system
including: a user identifying device which authenticates a
personal identification by receiving a user ID; a
customizing device which generates a customized
10 operational message of the system appropriate for a user
whose identification is authenticated; and an operational
history storage device which stores operational history
records of a number of users, each user having a different
user ID, and each history record indicating an operational
15 characteristic of one of the number of users, wherein the
customizing device reads an operational history record of
the user, whose identification is authenticated, from the
operational history storage device, detects the
operational characteristic of the user from the read
20 history record, and updates the customized operational
message in accordance with the detected operational
characteristic.

 In the office information system of the
present invention, the customizing device reads an
25 operational history record of the user, whose

1 identification is authenticated, from the operational
history storage device, detects the operational
characteristic of the user from the read history record,
and updates the customized operational message in
5 accordance with the detected operational characteristic.
The office information system of the present invention is
effective in setting the customized operational messages
of the system appropriate for individual users and in
increasing the operability of the system for the
10 individual users by the use of the customized operational
messages.

 The above-mentioned objects of the present
invention are achieved by an office information system
including: a communication device linked to a remote
15 terminal via a network for telecommunications between the
system and the remote terminal; an information processing
device which produces a reconstructed image when an image
transmitted by the remote terminal is received by the
communication device via the network; an output-data
20 processing device which determines whether the
reconstructed image output from the information processing
device is defective in an image quality; and a message
device which supplies, when the reconstructed image is
determined as being defective, an error message,
25 indicating that an error occurs in the outputting of the

1 image by the system, to the communication device, so that
the error message is transmitted to the remote terminal
via the network.

In the office information system of the
5 present invention, the output-data processing device
determines whether the reconstructed image output from the
information processing device is defective in the image
quality, and the message device supplies, when the
reconstructed image is determined as being defective, an
10 error message, indicating that an error occurs in the
outputting of the image by the system, to the
communication device, so that the error message is
transmitted to the remote terminal via the network. The
office information system of the present invention is
15 effective in safely transmitting an error message from the
system to the remote terminal when an error occurs in the
outputting of the image by the system.

The above-mentioned objects of the present
invention are achieved by an office information system
20 including: a communication device linked to a remote
terminal via a network for telecommunications between the
system and the remote terminal; a printing device which
produces a printed image; an image-quality evaluation
device which produces a result of evaluation of a quality
25 of the printed image every time the printed image is

1 output by the printing device; and a storage device,
coupled to the communication device, which stores the
result of evaluation output by the image-quality
evaluation device, wherein a latest result of the
5 evaluation that is output by the image-quality evaluation
device is stored in the storage device, and the
communication device transmits an operational message,
indicating the stored latest result of the evaluation, to
the remote terminal via the network when an image-quality
10 message request from the remote terminal is received at
the communication device.

 In the office information system of the
present invention, the latest result of the evaluation
that is output by the image-quality evaluation device is
15 stored in the storage device, and the communication device
transmits an operational message, indicating the stored
latest result of the evaluation, to the remote terminal
via the network when an image-quality message request from
the remote terminal is received at the communication
20 device. The office information system of the present
invention makes it possible to provide the user on the
remote terminal with the operational message of the system
when a specific request from the remote terminal is
received.

25 The above-mentioned objects of the present

1 invention are achieved by an office information system
including: a sound input device which accepts an input
signal; an acoustic signal detecting device which detects
an acoustic signal from the input signal accepted by the
5 sound input device; a first evaluation device which
determines whether the detected acoustic signal is a noise
signal or a speech signal; a speech dictionary which
stores reference feature patterns provided for a speech
recognition; a machine noise dictionary which stores
10 reference noise patterns provided for a noise/speech
evaluation; a speech recognition device which recognizes,
when the detected acoustic signal is determined as being
the speech signal, the speech signal as being an
operational request based on the reference feature
15 patterns from the speech dictionary; a second evaluation
device which determines whether the noise signal is
acceptable based on the reference noise patterns from the
machine noise dictionary, when the detected acoustic
signal is determined as being the noise signal; a noise
20 storage device which stores a machine noise signal; a
noise storage control device which allows the machine
noise signal to be stored into the noise storage device,
based on a result of the determination of the noise signal
by the second evaluation device; and a sound output device
25 which reproduces the noise signal from the noise storage

1 device.

In the office information system of the present invention, the second evaluation device determines whether the noise signal is acceptable based on the reference noise patterns from the machine noise dictionary, when the detected acoustic signal is determined as being the noise signal. The noise storage control device allows the machine noise signal to be stored into the noise storage device, based on a result of the determination of the noise signal by the second evaluation device. The sound output device reproduces the noise signal from the noise storage device. The office information system of the present invention is effective in providing easy searching and recognition of a failure in the system by using the result of the machine noise evaluation, and in providing the user with an operational message that allows efficient failure recovery in the system.

The above-mentioned objects of the present invention are achieved by an office information system including: an image processing device which prints a processed image, obtained from an original image, on a copy sheet; a self-diagnosis device which determines whether the printed image on the copy sheet, output from the image processing device, is defective in image

1 quality; and a voice output device which outputs a
synthesized voice when the printed image is determined as
being defective, the synthesized voice indicating a result
of the determination by the self-diagnosis device.

5 In the office information system of the
present invention, the voice output device outputs a
synthesized voice when the printed image is determined as
being defective, the synthesized voice indicating a result
of the determination by the self-diagnosis device. The
10 office information system of the present invention is
effective in providing easy recognition of lack of toner
or lack of copy sheets in the system by providing a user
with a failure-detection voice message based on the result
of the self-diagnosis of the system.

15 The above-mentioned objects of the present
invention are achieved by an office information system
including: a voice input device which accepts an input
voice from a user so as to generate an electrical signal
corresponding to the input voice; a voice recognition
20 device which recognizes the electrical signal, produced by
the voice input device, as being an operational command
input to the office information system; and a command
execution device which executes an image forming operation
on the office information system based on the operational
25 command recognized by the voice recognition device,

1 wherein the voice recognition device is configured to
recognize the electrical signal as being an operational
command which sets an operating condition change to the
image forming operation, the operating condition change
5 being represented by a difference between a previously-set
operating condition and a currently-set operating
condition.

In the office information system of the
present invention, the voice recognition device is
10 configured to recognize the electrical signal as being an
operational command which sets an operating condition
change to the image forming operation, the operating
condition change being represented by a difference between
a previously-set operating condition and a currently-set
15 operating condition. The command execution device
executes an image forming operation on the office
information system based on the recognized operational
command. The office information system of the present
invention is effective in providing an increased
20 operability in the setting of the operating conditions and
the operating condition changes to the image forming
operation being executed on the office information system.
It is possible for the office information system of the
present invention to ensure easy operating-condition
25 setting procedures for the user.

1 The above-mentioned objects of the present
invention are achieved by an office information system
including: an operational event detecting device which
determines whether an operational error occurs in the
5 system by detecting a plurality of predetermined
operational events in the system; and a voice message
device which outputs a voice message based on a result of
the detection of the plurality of predetermined
operational events, the voice message being indicative of
10 the occurrence of an operational error in the system.

 In the office information system of the
present invention, the voice message device outputs a
voice message based on a result of the detection of the
plurality of predetermined operational events, the voice
15 message being indicative of the occurrence of an
operational error in the system. The office information
system of the present invention is effective in providing
improved man-machine interface which allows the user to
easily recognize the operational error in the system.

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BRIEF DESCRIPTION OF THE DRAWINGS

 Other objects, features and advantages of
the present invention will become more apparent from the
following detailed description when read in conjunction
25 with the accompanying drawings in which:

1 FIG. 1 is a block diagram of a first
embodiment of the office information system according to
the invention;

5 FIG. 2 is a diagram for explaining path
records stored in a path record storage device in the
office information system of the present embodiment;

FIG. 3 is a diagram showing an example of a
message device in the office information system of the
present embodiment;

10 FIG. 4 is a block diagram of a message
device in the office information system of the present
embodiment;

FIG. 5 is a block diagram of an operation
control unit in the message device of FIG. 4;

15 FIG. 6 is a diagram showing a variation of
the office information system of the present embodiment;

FIG. 7 is a block diagram of another
variation of the office information system of the present
embodiment;

20 FIG. 8 is a diagram showing an enclosure of
an office information system according to the related art;

FIG. 9 is a diagram showing an image of a
failure location displayed on an LCD panel of the office
information system of FIG. 8;

25 FIG. 10 is a diagram showing an internal

1 structure of the office information system of FIG. 8;

FIG. 11 is a block diagram of a second embodiment of the office information system according to the invention;

5 FIG. 12 is a block diagram of a user identifying device in the office information system of the present embodiment;

FIG. 13 is a block diagram of a variation of the office information system of the present embodiment;

10 FIG. 14 is a block diagram of another variation of the office information system of the present embodiment;

FIG. 15 is a block diagram of another variation of the office information system of the present embodiment;

FIG. 16 is a block diagram of another variation of the office information system of the present embodiment;

20 FIG. 17 is a block diagram of a third embodiment of the office information system according to the invention;

FIG. 18 is a block diagram of a variation of the office information system of the present embodiment;

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1 FIG. 19 is a diagram for explaining a
request-source information stored in the office
information system of FIG. 18;

5 FIG. 20 is a block diagram of a fourth
embodiment of the office information system according to
the invention;

FIG. 21 is a block diagram of a variation
of the office information system of the present
embodiment;

10 FIG. 22 is a block diagram of another
variation of the office information system of the present
embodiment;

15 FIG. 23 is a block diagram of another
variation of the office information system of the present
embodiment;

FIG. 24 is a block diagram of another
variation of the office information system of the present
embodiment;

20 FIG. 25 is a block diagram of another
variation of the office information system of the present
embodiment;

FIG. 26 is a block diagram of another
variation of the office information system of the present
embodiment;

25 FIG. 27 is a block diagram of another

1 variation of the office information system of the present
embodiment;

FIG. 28 is a diagram for explaining a
configuration of the office information system of the
5 present embodiment linked to an analog telephone network;

FIG. 29 is a diagram for explaining another
configuration of the office information system of the
present embodiment linked to a digital network;

FIG. 30 is a diagram for explaining a
10 configuration of the office information system of the
present embodiment linked to an analog telephone network;

FIG. 31 is a diagram for explaining a
configuration of the office information system of the
present embodiment linked to an analog telephone network;

15 FIG. 32 is a block diagram of a fifth
embodiment of the office information system according to
the invention;

FIG. 33 is a diagram showing an example of
a noise data stored in a noise storage device of the
20 office information system of FIG. 32;

FIG. 34 is a block diagram of a variation
of the office information system of the present
embodiment;

FIG. 35 is a diagram showing an example of
25 a noise data stored in a noise storage device of the

1 office information system of FIG. 34;

FIG. 36 is a block diagram of a sixth embodiment of the office information system according to the invention;

5 FIG. 37 is a block diagram of a seventh embodiment of the office information system according to the invention;

FIG. 38 is a diagram for explaining a relationship between voice inputs and stored increments in the office information system of FIG. 37;

10 FIG. 39 is a block diagram of a variation of the office information system of the present embodiment;

FIG. 40 is a diagram for explaining an operation of an operating-condition input device in the office information system of FIG. 39;

FIG. 41 is a block diagram of an eighth embodiment of the office information system according to the invention;

20 FIG. 42 is a block diagram of a variation of the office information system of the present embodiment;

FIG. 43 is a block diagram of another variation of the office information system of the present embodiment; and

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1 FIG. 44 is a block diagram of another
variation of the office information system of the present
embodiment.

5 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

A description will now be given of the
preferred embodiments of the present invention with
reference to the accompanying drawings.

FIG. 1 is a block diagram of a first
10 embodiment of the office information system according to
the invention. The office information system of this
embodiment is applicable to copier systems, facsimile
systems or printer systems.

The office information system of FIG. 1
15 includes a path record storage device 1 which stores a
plurality of path records related to components of the
system, each path record indicating a locating path needed
to reach a location of a specific one of the components in
the system when a failure of the specific one of the
20 components occurs. A failure location detecting device 2
detects a location of a component in the system when a
failure related to that component occurs. A reached
location determining device 3 reads a path record from the
path record storage device 1 when the location of the
25 failure is detected by the failure location detecting

1 device 2, and determines a currently reached location in
the system based on the path indicated by the path record.
A message device 4 generates, when the reached location is
determined by the reached location determining device 3,
5 an operational message needed for recovering the failure
at a subsequent location of the path following the reached
location.

For the sake of simplicity of description,
suppose that the office information system of the present
10 embodiment includes an enclosure which is essentially the
same as the enclosure 100 shown in FIG. 8. That is, an
LCD panel is provided on top of the enclosure of the
office information system of the present embodiment, and
an access door is provided at a lower portion of the
15 enclosure. Further, the office information system of the
present embodiment includes a plurality of internal
components at respective locations A1, A2, B1, B2 and B3,
as shown in FIG. 10. The operator on the office
information system of the present embodiment opens the
20 access door and looks into the components of the system
for the purpose of repair or maintenance.

FIG. 2 is a diagram for explaining path
records stored in the path record storage device 1 in the
office information system of the present embodiment.

25 As described above, it is supposed that the

1 office information system of the present embodiment
includes the internal components at the respective
locations A1, A2, B1, B2 and B3, as shown in FIG. 10.

As shown in FIG. 2, each path record stored
5 in the path record storage device 1 indicates a failure
location and its locating path. The locating path is
needed for the user (or the operator) to reach a location
of a specific one of the components in the system when a
failure of the specific one of the components occurs. The
10 locating path means a list of the internal components of
the system, showing the route that the user has to take to
find the location of the detected failure in the system.

For example, when a failure of the
component B1 occurs, the path record corresponding to the
15 failure location B1 in the path record storage device 1
indicates the locating path "B1" as shown in FIG. 2. This
means that the route the user has to take to find the
location of the faulty component B1 is the component B1
only. When a failure of the component B3 occurs, the path
20 record corresponding to the failure location B3 in the
path record storage device 1 indicates the locating path
"B2, B3" as shown in FIG. 2. This means that the route
the user has to take to find the location of the faulty
component B3 is the components B2 and B3, and that the
25 user has to remove or move the component B2 from the

1 original position before reaching the location of the
faulty component B3.

FIG. 3 shows an example of the message
device 4 in the office information system of the present
5 embodiment. As shown in FIG. 3, the message device 4
includes a plurality of optical-output indicators LA1,
LA2, LB1, LB2 and LB3, which are provided adjacent to the
respective internal components A1, A2, B1, B2 and B3 of
the system. The optical-output indicators are, for
10 example, light-emitting diodes (LED). Each of these
optical-output indicators lights up (or blinks) in
response to a light-on signal that indicates a subsequent
location of the locating path following the reached
location in the system.

15 In the office information system of FIG. 3,
the message device 4 provides the user with the
operational message by outputting a light-on signal that
is indicative of a subsequent location of the locating
path following the reached location in the system. This
20 light-on signal is output by the message device 4 to a
corresponding one of the optical-output indicators LA1,
LA2, LB1, LB2 and LB3 of the system. Accordingly, the
office information system of the present embodiment is
effective in providing easy searching and recognition of a
25 location of a failure in the system and in providing the

1 user with a failure-recovery operational message that
allows efficient failure recovery in the system.

Alternatively, the message device 4 may
provide the user with the operational message by
5 outputting a synthesized voice signal that is indicative
of a subsequent location of the locating path following
the reached location in the system. In this case, the
message device 4 includes a voice synthesis unit for
generating the synthesized voice signal, and a speaker
10 outputting a synthesized voice in response to the voice
signal.

A description will now be given of an
operation of the office information system of the present
embodiment.

15 When a failure, such as paper jam or lack
of toner, in the office information system of the present
embodiment occurs, an image indicating a failure location
in the system is displayed on the LCD panel on top of the
enclosure of the system in a manner similar to the example
20 of FIG. 9. Suppose that a paper jam has occurred at the
location of the component B3 in the system. The user
views the image on the LCD panel, opens the access door,
and searches for the location of the paper jam in the
system corresponding to the location "B3" in the displayed
25 image. If the location of the paper jam can be found, the

1 user performs a repairing or correcting operation on the
related component at the location "B3" so as to eliminate
the failure from the system.

In the above-mentioned case, the failure
5 location detecting device 2 detects the location of the
faulty component B3 in the office information system of
FIG. 1 when the paper jam occurs. The reached location
determining device 3 reads a corresponding path record (or
the locating path "B2, B3") from the path record storage
10 device 1 when the location of the failure is detected by
the failure location detecting device 2, and determines a
currently reached location in the system based on the path
indicated by the path record. The message device 4
generates, when the reached location is determined by the
15 reached location determining device 3; an operational
message needed for recovering the failure at a subsequent
location of the path following the reached location.

Specifically, in the office information
system of FIG. 3, when the path record (or the locating
20 path "B2, B3") is read from the path record storage device
1, the reached location determining device 3 initially
determines the location of the access door as being the
currently reached location in the system. The message
device 4 initially outputs a light-on signal to the
25 optical-output indicator LB2 at the subsequent location B2

1 in the system. The optical-output indicator LB2 lights up
or blinks. If the user removes or moves the component B2
from the original position, the reached location
determining device 3 determines the location of the
5 component B2 as being the currently reached location in
the system based on the path record. The message device 4
outputs a light-on signal that is indicative of the
subsequent location B3 of the locating path following the
reached location B2 in the system. The message device 4
10 outputs the light-on signal to the optical-output
indicator LB3. The optical-output indicator LB3 lights up
or blinks, which shows the location of the faulty
component B3 in the system for the user.

Also, in the case of the message device 4
15 which outputs a synthesized voice signal in order to
provide the user with the operational message, a similar
operation is carried out by the office information system
of the present embodiment. The message device 4 initially
outputs a synthesized voice signal indicating the location
20 of the component B2 in the system. If the user removes or
moves the component B2 from the original position, the
reached location determining device 3 determines the
location of the component B2 as being the currently
reached location in the system based on the path record.
25 The message device 4 outputs a synthesized voice signal

1 that is indicative of the subsequent location B3 of the
locating path following the reached location B2 in the
system, which shows the location of the faulty component
B3 in the system for the user. Accordingly, the office
5 information system of the present embodiment is effective
in providing easy searching and recognition of a location
of a failure in the system and in providing the user with
a failure-recovery operational message that allows
efficient failure recovery in the system.

10 Further, in the office information system
of the present embodiment, the message device 4 may be
configured to provide the user with the operational
message by outputting both the light-on signal and the
synthesized voice signal. The use of such message device
15 4 makes it possible that the office information system of
the present embodiment provides easier searching and
recognition of a location of a failure in the system and
allows more efficient failure recovery in the system.

FIG. 4 is a block diagram of the above
20 message device 4 in the office information system of the
present embodiment. This message device 4 is configured
to output both a light-on signal and a synthesized voice
signal synchronized to the light-on signal when a voice
output mode of the system is selected by the user.

25 Similar to the embodiment of FIG. 3, the

1 message device 4 in this embodiment includes a plurality
of optical-output indicators, provided adjacent to the
respective internal components of the system, each of
which lights up in response to a light-on signal that
5 indicates the subsequent location in the system.

The message device 4 further includes, as
shown in FIG. 4, an operation control unit 5, a voice
synthesis unit 6, and a voice output unit 7. In
synchronism with the light-on signal, the voice synthesis
10 unit 6 generates a synthesized voice signal indicating a
subsequent location of the locating path following a
reached location in the system. This synthesized voice
signal is supplied from the voice synthesis unit 6 to the
voice output unit 7. The voice output unit 7 is, for
15 example, a speaker. The voice output unit 7 outputs a
synthesized voice in accordance with the synthesized voice
signal output from the voice synthesis unit 6. The
operation control unit 5 allows the voice synthesis unit 6
to generate the synthesized voice signal when the voice
20 output mode of the system is selected by the user. The
operation control unit 5 includes, for example, a
selection switch. In the present embodiment, when the
selection switch on the operation control unit 5 is turned
on by the user, the voice output mode is selected.

25 In the office information system of the

1 above-mentioned embodiment, when the necessity of the
voice output mode on the system arises, the message device
4 can output the synthesized voice signal synchronized to
the light-on signal. On the other hand, when the voice
5 output mode is not selected by the user (or when the
selection switch is turned off by the user), the
outputting of the synthesized voice signal by the voice
synthesis unit 6 is inhibited.

FIG. 5 is a block diagram of the operation
10 control unit 5 in the message device 4 of FIG. 4.

As shown in FIG. 5, the operation control
unit 5 includes a voice input unit 8 and a voice
recognition unit 9. The voice input unit 8 converts an
input voice from the user into an electrical signal. The
15 voice recognition unit 9 recognizes the electrical signal,
produced by the voice input unit 8, as being the selection
of the voice output mode.

The operation control unit 5 of FIG. 5
allows the voice synthesis unit 6 to generate the
20 synthesized voice signal when the electrical signal is
recognized by the voice recognition unit 9 as being the
selection of the voice output mode, so that the subsequent
location indicated by the synthesized voice is provided to
the user. The use of the operation control unit 5 of FIG.
25 5 makes it possible that the user supplies the input voice

1 to the voice input unit 8 in order to select the voice
output mode of the system, instead of turning on the
selection switch by hand.

FIG. 6 shows a variation of the office
5 information system of the present embodiment.

The office information system of FIG. 6
further includes an internal antenna 21, a transmitter/
receiver device 22, and a radio communication handset 23.
The radio transmitter/receiver unit 22 is coupled to the
10 message device 4, and communicates with the radio
communication handset 23 by a radio signal. In the office
information system, when the transmitter/receiver unit 22
receives an input radio signal from the handset 23, the
input radio signal indicating the selection of the voice
15 output mode from the user, the operation control unit 5
allows the voice synthesis unit 6 to generate the
synthesized voice signal, and when a synthesized voice is
output from the message device 5, the transmitter/receiver
unit 22 transmits an output radio signal carrying the
20 synthesized voice to the handset 23.

In the embodiment of FIG. 6, the radio
communication handset 23 is, for example, a portable
telephone. It is not necessary that the user stays
adjacent to the voice input unit 8 in the office
25 information system, because of the use of the portable

1 telephone 23. The office information system of the
present embodiment is more effective in providing easy
searching and recognition of a location of a failure in
the system and in providing the user with a failure-
5 recovery operational message that allows efficient failure
recovery in the system.

FIG. 7 is a block diagram of another
variation of the office information system of the present
embodiment.

10 The office information system of FIG. 7
further includes a failure recovery message device 10 in
addition to the elements of the embodiment of FIG. 1. The
failure recovery message device 10 provides the user with
a failure recovery message that indicates whether or not
15 the recovery of the failure in the system is completed.

Specifically, the failure recovery message
device 10 controls the LCD panel on the top of the
enclosure of the system, so that the failure recovery
message is displayed on the LCD panel, in order to notify
20 the user of the completion of the failure recovery in the
system. Alternatively, the failure recovery message
device 10 may output a synthesized voice indicating that
the recovery of the failure in the system is completed.
This enables the user to safely recognize the completion
25 of the failure recovery in the system.

1 Next, FIG. 11 is a block diagram of a
second embodiment of the office information system
according to the invention. The office information system
of the present embodiment is applicable to copier systems,
5 facsimile systems or printer systems.

As shown in FIG. 11, the office information
system of the present embodiment includes a user
identifying device 21 and a customizing device 22. The
user identifying device 21 authenticates a personal
10 identification by receiving a user ID. The customizing
device 22 generates a customized operational message of
the system appropriate for a user whose identification is
authenticated by the user identifying device 21.

The office information system of FIG. 11 is
15 effective in setting the customized operational messages
of the system appropriate for individual users, and in
increasing the operability of the system for the
individual users by the use of the customized operational
messages.

20 Specifically, in the present embodiment,
the user identifying device 21 checks an IC card with a
user ID recorded therein, and authenticates a personal
identification by using the user ID obtained from the IC
card.

25 Alternatively, the user identifying device

1 21 may be configured to accept a call from a portable
telephone and receive a caller ID number from the portable
telephone. The user identifying device 21 of this
embodiment authenticates a personal identification by
5 using the caller ID number obtained from the portable
telephone.

FIG. 12 is a block diagram of a user
identifying device 21 in the office information system of
the present embodiment.

10 The user identifying device 21 of FIG. 12
includes a voice input unit 211 and a user verifying unit
212. The voice input unit 211 receives an input voice
from a user, the input voice indicating a user ID of that
user. The user verifying unit 212 compares the input
15 voice with a pre-recorded user ID. When the input voice
matches the pre-recorded user ID, the user verifying unit
212 authenticates the personal identification of that
user.

Alternatively, the user identifying device
20 21 may be configured to receive a user ID which is
manually inputted by the user on a control panel (not
shown) of the system.

FIG. 13 is a block diagram of a variation
of the office information system of the present
25 embodiment. In FIG. 13, the elements which are

1 essentially the same as corresponding elements in FIG. 11
are designated by the same reference numerals.

 The office information system of FIG. 13
includes a user identifying device 21 which authenticates
5 a personal identification by receiving a user ID. A
customizing device 22 generates a customized one-touch-key
or address message of the system appropriate for a user
whose identification is authenticated by the user
identifying device 21. A storage device 23 stores one-
10 touch-key records or address-note records of a number of
users, each user having a different user ID, and each
record indicating one-touch-key data or address-note data
of one of the number of users. In this office information
system, the customizing device 22 reads the one-touch-key
15 record or the address-note record of the user, whose
identification is authenticated, from the storage device
23. The customizing device 22 detects the one-touch-key
data or the address-note data of the user from the read
record, and updates the customized one-touch-key or
20 address message in accordance with the detected data.

 The office information system of the
present embodiment is effective in setting the customized
one-touch-key or address messages of the system
appropriate for individual users, and in increasing the
25 operability of the system for the individual users by the

1 use of the customized one-touch-key or address messages.

FIG. 14 is a block diagram of another variation of the office information system of the present embodiment. In FIG. 14, the elements which are
5 essentially the same as corresponding elements in FIG. 11 are designated by the same reference numerals.

The office information system of FIG. 14 includes a user identifying device 21 which authenticates a personal identification by receiving a user ID. A
10 customizing device 22 generates a customized operational message of the system appropriate for a user whose identification is authenticated by the user identifying device 21. An operational history storage device 27 stores operational history records of a number of users,
15 each user having a different user ID, and each history record indicating an operational characteristic of one of the number of users. In this office information system, the customizing device 22 reads an operational history record of the user, whose identification is authenticated, from
20 the operational history storage device 27. The customizing device 22 detects the operational characteristic of the user from the read history record, and updates the customized operational message in accordance with the detected operational characteristic.

25 Specifically, in the above-described

1 embodiment, the operational history storage device 27
stores a voice command table containing individual voice
command records of a number of users, each voice command
record indicating a voice command of one of the users.
5 The customizing device 22 reads a voice command of the
user, whose identification is authenticated, from the
operational history storage device 27. The customizing
device 22 detects the operational characteristic of the
user from the read voice command record, and updates the
10 customized voice command in accordance with the detected
operational characteristic.

The office information system of the
present embodiment is effective in setting the customized
operational messages of the system appropriate for
15 individual users and in increasing the operability of the
system for the individual users by the use of the
customized operational messages.

FIG. 15 is a block diagram of another
variation of the office information system of the present
20 embodiment. In FIG. 15, the elements which are
essentially the same as corresponding elements in FIG. 11
are designated by the same reference numerals.

The office information system of FIG. 15
includes a user identifying device 21 which authenticates
25 a personal identification by receiving a user ID. A

1 customizing device 22 generates a customized operational
message of the system appropriate for a user whose
identification is authenticated by the user identifying
device 21. An operational history storage device 27A
5 stores operational history records of a number of users,
each user having a different user ID, and each history
record indicating an operational characteristic of one of
the number of users. A voice output device 28 produces a
synthesized voice according to the customized operational
10 message output from the customizing device 22. In this
office information system, the customizing device 22 reads
an operational history record of the user, whose
identification is authenticated, from the operational
history storage device 27A. The customizing device 22
15 detects the operational characteristic of the user from
the read history record, and updates the customized
operational message in accordance with the detected
operational characteristic.

Specifically, in the above-described
20 embodiment, the operational history storage device 27A
stores a total time of use of the system with respect to
each of the number of users, in addition to the
operational history records. The customizing device 22
detects the total time of use of the system of the user
25 from the read history record, and modifies the level of

1 expertise related to the customized operational message
 (to an appropriate level among beginner, expert and other
 levels) in accordance with the detected time of use.

 FIG. 16 is a block diagram of another
5 variation of the office information system of the present
 embodiment. In FIG. 16, the elements which are
 essentially the same as corresponding elements in FIG. 15
 are designated by the same reference numerals, and a
 description thereof will be omitted.

10 Specifically, the office information system
 of FIG. 16 includes an operational history storage device
 27B which stores an operational behavior on the system
 with respect to each of the users, in addition to the
 operational history records. The customizing device 22
15 detects the operational behavior on the system for the
 user from the read history record, and updates the
 customized operational message in accordance with the
 detected operational behavior. The voice output device 28
 produces a synthesized voice according to the customized
20 operational message output from the customizing device 22.
 Hence, the present embodiment can make the synthesized
 voice at the output of the voice output device 28
 appropriate for the individual users.

 Next, FIG. 17 is a block diagram of a third
25 embodiment of the office information system according to

1 the invention. The office information system of this
embodiment is applicable to image forming systems having a
communication device, such as copier systems, facsimile
systems or printer systems.

5 As shown in FIG. 17, the office information
system U of the present embodiment is linked to a remote
terminal T via a network. The remote terminal T is, for
example, a personal computer, a printer, a telephone or a
facsimile. Herein, the remote terminal T is considered a
10 request source to the office information system U.

 The office information system U includes a
communication device 31 which is linked to the remote
terminal T via the network for telecommunications between
the system U and the remote terminal T. An information
15 processing device 32 produces a reconstructed image when
an image sent by the remote terminal T (the request
source) via the network is received at the communication
device 31. An output-data processing device 33 determines
whether the reconstructed image output from the
20 information processing device 33 is defective in image
quality. When the reconstructed image is determined as
being defective, a message device 34 supplies an error
message, indicating that an error occurs in the outputting
of the image received at the system, to the communication
25 device 31, so that the error message is transmitted from

1 the office information system U to the remote terminal T
via the network.

The office information system of the above-
described embodiment is effective in safely transmitting
5 an error message from the system to the remote terminal
when an error occurs in the outputting of the image by the
system. When an image from the remote terminal (e.g., a
facsimile) is received at the office information system
(e.g., an image forming system having a facsimile
10 transmission function) but a defective image is
reconstructed by the system due to lack of ink or toner,
the operator on the remote terminal is uncertain of
whether the reconstructed image is properly output by the
office information system. The office information system
15 of the above-described embodiment can automatically
transmit the error message to the remote terminal if an
error occurs at the office information system.

FIG. 18 is a block diagram of a variation
of the office information system of the present
20 embodiment. In FIG. 18, the elements which are
essentially the same as corresponding elements in FIG. 17
are designated by the same reference numerals.

As shown in FIG. 18, the office information
system of the present embodiment includes an office
25 information system U and an information management system

1 V. The office information system U is linked to the
information management system V via a network (e.g., a
public telephone network or the Ethernet). The
information management system V is linked to a plurality
5 of remote terminals T1, T2, ..., Tn via the network. The
information management system V manages information
transmitted between the office information system U and
the remote terminals T1, T2, ..., Tn via the network.

 The remote terminals T1, T2, ..., Tn are,
10 for example, personal computers, printers, telephone sets
or facsimiles. For the sake of convenience, suppose that
the remote terminals T1, T2 and Tn are facsimiles, the
remote terminal T3 is a personal computer having an
electronic mail function, the remote terminal T5 is a
15 telephone set, and the remote terminal T6 is a printer.

 In the office information system of the
above-described embodiment, the information management
system V includes a communication device 36, a request-
source information management device 37, an office-system
20 information management device 38, and a message transmit
device 39. The communication device 36 is linked to the
office information system U via the network for
telecommunications between the system V and the system U.
The request-source information management device 37 stores
25 transmit data IDs and request-source records corresponding

1 to the respective transmit data IDs.

In the office information system U of the
above-described embodiment, the communication device 31 is
linked to the system V via the network for
5 telecommunications between the system U and the system V.
The information processing device 32 produces a
reconstructed image when an image sent by a certain remote
terminal (the request source) via the network is received
at the communication device 31. The output-data
10 processing device 33 determines whether the reconstructed
image output from the information processing device 33 is
defective in image quality. When the reconstructed image
is determined as being defective, the message device 34
supplies an error message, indicating that an error occurs
15 in the outputting of the image by the system, to the
communication device 31, so that the error message is
transmitted from the office information system U to the
information management system V via the network.

When an image is transmitted by a certain
20 remote terminal (the request source) via the network, the
information management system V stores a transmit data ID
for the image in the request-source information management
device 37, inserts the transmit data ID into the image,
and transmits the image with the transmit data ID from the
25 system V to the system U via the network. When an error

1 message is transmitted by the system U via the network,
the office-system information management device 38 of the
system V manages the error message, and the information
management system V transmits the error message to the
5 specific one (the request source) of the remote terminals
T1, T2, ..., Tn via the network.

FIG. 19 is a diagram for explaining
request-source records stored in the information
management system V of the office information system of
10 FIG. 18.

As described above, the request-source
records, shown in FIG. 19, are stored in the request-
source information management device 37 of the information
management system V. The request-source information is
15 needed to transmit the error message from the office
information system U to a specific one of the remote
terminals T1, T2, ..., Tn via the network. As shown in
FIG. 19, each request-source record, stored in the device
37, includes a transmit data ID, a transmit date/time, a
20 destination phone No., a transmit terminal, a message
receiving terminal, a destination device address, and a
name of requesting person.

As shown in FIG. 19, in the message
receiving terminal field of each request-source record,
25 the specific one of the remote terminals to which the

1 error message is sent is recorded. In the destination
device address field of each request-source record, the
electronic mail address, the facsimile device number or
the telephone number of the message receiving terminal is
5 recorded. In the requesting person name field of each
request-source record, the name of the person who receives
the error message is recorded.

Next, FIG. 20 is a block diagram of a
fourth embodiment of the office information system
10 according to the invention. The office information system
of the present embodiment is applicable to image forming
systems having a communication device, such as copier
systems, facsimile systems or printer systems.

The office information system of FIG. 20
15 includes a printing device 41 which produces a printed
image 42. An image-quality evaluation device 43 produces
a result of evaluation of a quality of the printed image
42 every time the printed image is output by the printing
device 41. The image-quality evaluation device 43 is
20 coupled to a communication device 44, and the
communication device 44 is linked to a remote terminal
(not shown) via a network for telecommunications between
the system and the remote terminal.

In the office information system of FIG.
25 20, when an image-quality message request from the remote

1 terminal (or the request source) is received at the
communication device 44, the communication device 44
transmits an operational message, indicating the result of
the evaluation output from the image-quality evaluation
5 device 43, back to the remote terminal via the network.
Specifically, when the image-quality message request is
received at the communication device 44, the communication
device 44 sends a control signal to the image-quality
evaluation device 43 so that the image-quality evaluation
10 device 43 produces a result of evaluation of a quality of
the printed image 42 output by the printing device 41.
Then, the communication device 44 transmits an operational
message, indicating the result of the evaluation, to the
remote terminal via the network. This enables the user on
15 the remote terminal to easily receive the operational
message of the office information system. The office
information system of the present embodiment makes it
possible to provide the user on the remote terminal with
the operational message of the system when an image-
20 quality message request from the remote terminal is
received.

FIG. 21 is a block diagram of a variation
of the office information system of the present
embodiment. In FIG. 21, the elements which are
25 essentially the same as corresponding elements in FIG. 20

1 are designated by the same reference numerals.

The office information system of FIG. 21 includes a printing device 41 which produces a printed image 42. An image-quality evaluation device 43 produces
5 a result of evaluation of a quality of the printed image 42 every time the printed image is output by the printing device 41. A storage device 45 stores the result of evaluation output by the image-quality evaluation device 43. The storage device 45 is coupled to a communication
10 device 44, and the communication device 44 is linked to a remote terminal (not shown) via a network for telecommunications between the system and the remote terminal.

In the office information system of FIG. 22, a latest result of the image-quality evaluation that is output by the image-quality evaluation device 43 is stored in the storage device 45, and the communication device 44 transmits an operational message, indicating the stored latest result of the evaluation, to the remote
20 terminal via the network when an image-quality message request from the remote terminal is received at the communication device 44.

In the office information system of the present embodiment, the latest result of the evaluation
25 that is output by the image-quality evaluation device 43

1 is stored in the storage device 45, and the communication
device 44 transmits an operational message, indicating the
stored latest result of the evaluation, to the remote
terminal via the network when an image-quality message
5 request from the remote terminal is received at the
communication device 44. The office information system of
the present embodiment makes it possible to provide the
user on the remote terminal with the operational message
related to the latest evaluation result of the system when
10 an image-quality message request from the remote terminal
is received.

FIG. 22 is a block diagram of another
variation of the office information system of the present
embodiment. In FIG. 22, the elements which are
15 essentially the same as corresponding elements in FIG. 20
are designated by the same reference numerals.

The office information system of FIG. 22
includes a printing device 41 which produces a printed
image on a copy sheet 412. A sheet-quality evaluation
20 device 413 produces a result of evaluation of a quality of
the copy sheet 412 every time the copy sheet is output by
the printing device 41. The sheet-quality evaluation
device 413 is coupled to a communication device 44, and
the communication device 44 is linked to a remote terminal
25 (not shown) via a network for telecommunications between

1 the system and the remote terminal.

In the office information system of FIG.

22, when a sheet-quality message request from the remote
terminal (or the request source) is received at the
5 communication device 44, the communication device 44
transmits an operational message, indicating the result of
the evaluation output from the sheet-quality evaluation
device 413, back to the remote terminal via the network.
Specifically, when the sheet-quality message request is
10 received at the communication device 44, the communication
device 44 sends a control signal to the sheet-quality
evaluation device 413 so that the sheet-quality evaluation
device 413 produces a result of evaluation of a quality of
the copy sheet 412 output by the printing device 41.
15 Then, the communication device 44 transmits an operational
message, indicating the result of the evaluation, to the
remote terminal via the network. This enables the user on
the remote terminal to easily receive the operational
message of the office information system. The office
20 information system of the present embodiment makes it
possible to provide the user on the remote terminal with
the operational message of the system when a sheet-quality
message request from the remote terminal is received.

FIG. 23 is a block diagram of another
25 variation of the office information system of the present

1 embodiment. In FIG. 23, the elements which are
essentially the same as corresponding elements in FIG. 22
are designated by the same reference numerals.

5 The office information system of FIG. 23
includes a printing device 41 which produces a printed
image on a copy sheet 412. A sheet-quality evaluation
device 413 produces a result of evaluation of a quality of
the copy sheet 412 every time the copy sheet is output by
the printing device 41. A storage device 415 stores the
10 result of evaluation output by the sheet-quality
evaluation device 413. The storage device 415 is coupled
to a communication device 44, and the communication device
44 is linked to a remote terminal (not shown) via a
network for telecommunications between the system and the
15 remote terminal.

 In the office information system of FIG.
23, a latest result of the sheet-quality evaluation that
is output by the sheet-quality evaluation device 413 is
stored in the storage device 415, and the communication
20 device 44 transmits an operational message, indicating the
stored latest result of the evaluation, to the remote
terminal via the network when a sheet-quality message
request from the remote terminal is received at the
communication device 44.

25 In the office information system of the

1 present embodiment, the latest result of the evaluation
that is output by the sheet-quality evaluation device 413
is stored in the storage device 415, and the communication
device 44 transmits an operational message, indicating the
5 stored latest result of the evaluation, to the remote
terminal via the network when a sheet-quality message
request from the remote terminal is received at the
communication device 44. The office information system of
the present embodiment makes it possible to provide the
10 user on the remote terminal with the operational message
related to the latest evaluation result of the system when
a sheet-quality message request from the remote terminal
is received.

FIG. 24 is a block diagram of another
15 variation of the office information system of the present
embodiment. In FIG. 24, the elements which are
essentially the same as corresponding elements in FIG. 20
are designated by the same reference numerals.

The office information system of FIG. 24
20 includes a printing device 41 which produces a printed
image 42. An image-quality evaluation device 43 produces
a result of evaluation of a quality of the printed image
42 every time the printed image is output by the printing
device 41. The image-quality evaluation device 43 is
25 coupled to a communication device 46, and the

1 communication device 46 is linked to a remote terminal
(not shown) via a network for telecommunications between
the system and the remote terminal.

In the office information system of FIG.

5 24, when an image-quality-specified message request from
the remote terminal (or the request source) is received at
the communication device 46, the communication device 46
transmits a printability message, indicating whether the
office information system is in a printable state, back to
10 the remote terminal via the network. Specifically, when
the image-quality-specified message request is received at
the communication device 46, the communication device 46
sends a control signal to the image-quality evaluation
device 43 so that the image-quality evaluation device 43
15 produces a result of evaluation of a quality of the
printed image 42 output by the printing device 41. When
the evaluated quality of the printed image 42 meets the
specified image quality of the received request, the
communication device 46 transmits a printability message,
20 indicating that the office information system is in a
printable state, to the remote terminal via the network.
Otherwise, the communication device 46 transmits a
printability message, indicating that the office
information system is not in a printable state, to the
25 remote terminal via the network. This enables the user on

1 the remote terminal to easily receive the printability
message of the office information system. The office
information system of the present embodiment makes it
possible to provide the user on the remote terminal with
5 the printability message of the system when an image-
quality-specified message request from the remote terminal
is received.

FIG. 25 is a block diagram of another
variation of the office information system of the present
10 embodiment. In FIG. 25, the elements which are
essentially the same as corresponding elements in FIG. 24
are designated by the same reference numerals.

The office information system of FIG. 25
includes a printing device 41 which produces a printed
15 image 42. An image-quality evaluation device 43 produces
a result of evaluation of a quality of the printed image
42 every time the printed image is output by the printing
device 41. A storage device 45 stores the result of
evaluation output by the image-quality evaluation device
20 43. The storage device 45 is coupled to a communication
device 46, and the communication device 46 is linked to a
remote terminal (not shown) via a network for
telecommunications between the system and the remote
terminal.

25 In the office information system of FIG.

1 25, a latest result of the image-quality evaluation that
is output by the image-quality evaluation device 43 is
stored in the storage device 45, and the communication
device 46 transmits a printability message, indicating
5 whether the office information system is in a printable
state, to the remote terminal via the network when an
image-quality-specified message request from the remote
terminal is received at the communication device 46.

 In the office information system of the
10 present embodiment, the latest result of the evaluation
that is output by the image-quality evaluation device 43
is stored in the storage device 45. Specifically, when
the image-quality-specified message request is received at
the communication device 46, the communication device 46
15 sends a control signal to the storage device 45 so that
the latest result of the evaluation is read from the
storage device 45. When the latest evaluation quality
from the storage device 45 meets the specified image
quality of the received request, the communication device
20 46 transmits a printability message, indicating that the
office information system is in a printable state, to the
remote terminal via the network. Otherwise, the
communication device 46 transmits a printability message,
indicating that the office information system is not in a
25 printable state, to the remote terminal via the network.

1 This enables the user on the remote terminal to easily
receive the printability message of the office information
system. The office information system of the present
embodiment makes it possible to provide the user on the
5 remote terminal with the printability message of the
system when an image-quality-specified message request
from the remote terminal is received.

FIG. 26 is a block diagram of another
variation of the office information system of the present
10 embodiment. In FIG. 26, the elements which are
essentially the same as corresponding elements in FIG. 22
are designated by the same reference numerals.

The office information system of FIG. 26
includes a printing device 41 which produces a printed
15 image on a copy sheet 412. A sheet-quality evaluation
device 413 produces a result of evaluation of a quality of
the copy sheet 412 every time the copy sheet is output by
the printing device 41. The sheet-quality evaluation
device 413 is coupled to a communication device 416, and
20 the communication device 416 is linked to a remote
terminal (not shown) via a network for telecommunications
between the system and the remote terminal.

In the office information system of FIG.
26, when a sheet-quality-specified message request from
25 the remote terminal (or the request source) is received at

1 the communication device 416, the communication device 416
transmits a printability message, indicating whether the
office information system is in a printable state, back to
the remote terminal via the network. Specifically, when
5 the sheet-quality-specified message request is received at
the communication device 416, the communication device 416
sends a control signal to the sheet-quality evaluation
device 413 so that the sheet-quality evaluation device 413
produces a result of evaluation of a quality of the copy
10 sheet 412 output by the printing device 41. When the
evaluated sheet quality meets the specified sheet quality
of the received request, the communication device 416
transmits a printability message, indicating that the
office information system is in a printable state, to the
15 remote terminal via the network. Otherwise, the
communication device 416 transmits a printability message,
indicating that the office information system is not in a
printable state, to the remote terminal via the network.
This enables the user on the remote terminal to easily
20 receive the printability message of the office information
system. The office information system of the present
embodiment makes it possible to provide the user on the
remote terminal with the printability message of the
system when a sheet-quality-specified message request from
25 the remote terminal is received.

1 FIG. 27 is a block diagram of another
variation of the office information system of the present
embodiment. In FIG. 27, the elements which are
essentially the same as corresponding elements in FIG. 26
5 are designated by the same reference numerals.

The office information system of FIG. 27
includes a printing device 41 which produces a printed
image on a copy sheet 412. A sheet-quality evaluation
device 413 produces a result of evaluation of a quality of
10 the copy sheet 412 every time the copy sheet is output by
the printing device 41. A storage device 415 stores the
result of evaluation output by the sheet-quality
evaluation device 413. The storage device 415 is coupled
to a communication device 416, and the communication
15 device 416 is linked to a remote terminal (not shown) via
a network for telecommunications between the system and
the remote terminal.

In the office information system of FIG.
27, a latest result of the sheet-quality evaluation that
20 is output by the sheet-quality evaluation device 413 is
stored in the storage device 415, and the communication
device 416 transmits a printability message, indicating
whether the office information system is in a printable
state, to the remote terminal via the network when a
25 sheet-quality-specified message request from the remote

1 terminal is received at the communication device 416.

In the office information system of the present embodiment, the latest result of the evaluation that is output by the sheet-quality evaluation device 413 is stored in the storage device 415. Specifically, when the sheet-quality-specified message request is received at the communication device 416, the communication device 416 sends a control signal to the storage device 415 so that the latest result of the sheet-quality evaluation is read from the storage device 415. When the latest evaluation quality from the storage device 415 meets the specified sheet quality of the received request, the communication device 416 transmits a printability message, indicating that the office information system is in a printable state, to the remote terminal via the network. Otherwise, the communication device 416 transmits a printability message, indicating that the office information system is not in a printable state, to the remote terminal via the network. This enables the user on the remote terminal to easily receive the printability message of the office information system. The office information system of the present embodiment makes it possible to provide the user on the remote terminal with the printability message of the system when a sheet-quality-specified message request from the remote terminal is received.

1 In the above embodiments of FIG. 20 through
FIG. 27, the office information system is configured such
that the communication device is linked to a digital
network (for example, the integrated services digital
5 network ISDN).

 Alternatively, the office information
system in the above embodiments of FIG. 20 through FIG. 27
may be configured such that the communication device is
linked to an analog telephone network (for example, the
10 public switched telephone network PSTN).

 FIG. 28 is a diagram for explaining a
configuration of the office information system of the
present embodiment linked to an analog telephone network.

 As shown in FIG. 28, the office information
15 system of this embodiment is configured to include a voice
recognition unit 47 and a voice synthesis unit 48 which
are linked to a remote terminal via an analog telephone
network. The voice recognition unit 47 recognizes a voice
signal, which is sent from the remote terminal (or the
20 request source) via the network, as being an operational
request for the office information system. The voice
synthesis unit 48 produces a synthesized voice signal,
which is sent to the remote terminal via the network,
based on an operational message output by the
25 communication device.

1 FIG. 29 is a diagram for explaining another
configuration of the office information system of the
present embodiment linked to a digital network.

 In the example of FIG. 29, three office
5 information systems (or three personal computers) P1, P2
and P3 are linked to a remote personal computer T1 via a
digital network. The office information system of the
present embodiment makes it possible that an operator OP
on the remote personal computer T1 sends an operational
10 request from the computer T1 to any of the office
information systems P1, P2 and P3 via the digital network,
and receives an operational message from the requested one
of the office information systems P1, P2 and P3 via the
digital network.

15 FIG. 30 is a diagram for explaining another
configuration of the office information system of the
present embodiment linked to an analog telephone network.

 In the example of FIG. 30, three office
information systems (or three personal computers) P1, P2
20 and P3 are linked to a center machine ST via an analog
telephone network, while remote telephone sets T2 and T3
are linked to the center machine ST via the analog
telephone network. The office information system of the
present embodiment makes it possible that an operator OP
25 on each of the remote telephone sets T2 and T3 sends an

1 operational request to any of the office information
systems P1, P2 and P3 via the analog telephone network,
and receives an operational message from the requested one
of the office information systems P1, P2 and P3 via the
5 analog telephone network.

FIG. 31 is a diagram for explaining another
configuration of the office information system of the
present embodiment linked to an analog telephone network.

In the example of FIG. 31, three office
10 information systems (or three personal computers) P1, P2
and P3 are linked to remote telephone sets T4 and T5 via
an analog telephone network. Similarly, the office
information system of the present embodiment makes it
possible that an operator OP on each of the remote
15 telephone sets T4 and T5 sends an operational request to
any of the office information systems P1, P2 and P3 via
the analog telephone network, and receives an operational
message from the requested one of the office information
systems P1, P2 and P3 via the analog telephone network.

20 In the examples of FIG. 30 and FIG. 31,
each of the office information systems P1, P2 and P3 is
provided with the voice recognition unit 47 and the voice
synthesis unit 48 as in the embodiment of FIG. 28, and
these elements 47 and 48 are linked to any remote terminal
25 via the analog telephone network.

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1 32, the acoustic signal detecting device 52 is capable of
detecting or extracting acoustic segments having a power
larger than a given threshold level from the input signal
accepted by the sound input device 51. A known method of
5 detecting whether the acoustic signal is caused by noise
or by speech, which is known in the fields of speech
recognition may be used for the acoustic signal detecting
device 52. For example, the detection of a noise signal
from an acoustic signal may be carried out by checking the
10 presence of a pitch in the acoustic signal or the
continuous period of the acoustic signal. Alternatively,
the acoustic signal detecting device 52 may be configured
to determine whether or not the acoustic signal is a
speech signal by using a known speech recognition
15 technique. When the acoustic signal is rejected as a
result of the speech recognition, the acoustic signal
detecting device 52 may determine that the acoustic signal
is a noise signal.

In the office information system of FIG.

20 32, the noise evaluation device 54 carries out the noise
evaluation in the following manner. Suppose that
reference noise patterns of "p" accepted noise signals and
reference noise patterns of "q" rejected noise signals are
stored in the machine noise dictionary 53. Further,
25 suppose that $N(k)$ (where $k = 1, 2, \dots, l$) denotes the

1 reference noise patterns of one of the "p" accepted noise
signals from the noise dictionary 53, and A(k) denotes the
reference noise patterns of one of the "q" rejected noise
signals from the noise dictionary 53. Suppose that the
5 noise signal detected by the detecting device 52 has a
sequence of feature patterns X_i (where $i = 1, 2, \dots, l$).
"l" denotes the number of frames which the acoustic signal
of concern is divided into. A suitable length of one
frame is, for example, 10 msec, which is equivalent to
10 that used in known speech recognition techniques. A
suitable type of the feature vector is, for example, LPC
MEL cepstrum, which is widely used in known speech
recognition techniques.

A similarity factor $R(X, N(k))$ which
15 represents the magnitude of a difference between the
feature patterns X of the noise signal of concern and the
reference noise patterns $N(k)$ of one of the "p" accepted
noise signals is calculated by using the following
equation:

20

$$R(X, N(k)) = \sum_{i=1}^l \{|X_i - N(k)|\} \quad (1)$$

In the noise evaluation device 54, the similarity factors
 $R(X, N(k))$ for all of the "p" accepted noise signals from
25 the noise dictionary 53 are first calculated in the above

1 manner. When all of the similarity factors $R(X, N(k))$ are
smaller than a predetermined threshold value TH1, the
noise evaluation device 54 determines that the noise
signal of concern is probably to be rejected. In this
5 case, the noise evaluation device 54 then calculates the
similarity factors $R(X, A(k))$ for all of the "q" rejected
noise signals from the noise dictionary 53 in a similar
manner. When all of the similarity factors $R(X, A(k))$ are
larger than a predetermined threshold value TH2, it is
10 finally determined that the noise signal of concern is not
acceptable (or it is rejected). On the other hand, when
the similarity factors $R(X, A(k))$ are smaller than the
threshold value TH2, it is determined that the noise
signal of concern is either an accepted noise signal
15 different from those stored in the noise dictionary 53 or
a rejected noise signal different from those stored in the
noise dictionary 53.

In the office information system of FIG.

32, when the noise evaluation is carried out at the noise
evaluation device 54, the noise storage control device 55
20 allows the machine noise signal to be stored into the
noise storage device 56, based on a result of the
determination of the noise signal by the noise evaluation
device 54. In the noise storage device 56, the machine
25 noise data with respect to the noise signal of concern is

1 stored together with the result (accepted or rejected) of
the noise evaluation. The noise storage control device 55
may be configured to allow a date and time of the
determination of the noise signal with respect to each
5 noise signal to be additionally stored into the noise
storage device 56. FIG. 33 shows an example of the noise
data stored in the noise storage device 56 of the office
information system of FIG. 32.

In the office information system of FIG.
10 32, the sound output device 57 is configured to reproduce
the noise signal from the noise storage device 56. Once
the machine noise data is stored in the noise storage
device 56, the noise signal can be reproduced by the sound
output device 57 from the noise storage device 56 at any
15 time. The user may input a reproduce request from a
keyboard (not shown) of the office information system, and
the sound output device 57 reproduces the noise signal
from the noise storage device 56 in response to the
request. Further, the date and time and the result of
20 evaluation with respect to each noise data may be
displayed on a display device (not shown) of the office
information system. Accordingly, the office information
system of the present embodiment is effective in providing
easy searching and recognition of a failure in the system
25 by using the result of the machine noise evaluation, and

1 in providing the user with an operational message that
allows efficient failure recovery in the system.

 Further, in the office information system
of FIG. 32, when the noise evaluation device 54 determines
5 that the noise signal of concern is either an accepted
noise signal different from those stored in the noise
dictionary 53 or a rejected noise signal different from
those stored in the noise dictionary 53, it is possible to
10 additionally register such a new noise signal into the
noise dictionary 53. The addition of new reference noise
patterns or the modification of the existing reference
noise patterns in the noise dictionary 53 is possible by
training the office information system on various noise
signals.

15 FIG. 34 is a block diagram of a variation
of the office information system of the present
embodiment. In FIG. 34, the elements which are
essentially the same as corresponding elements in FIG. 32
are designated by the same reference numerals.

20 The office information system of the
present embodiment includes, as shown in FIG. 34, a sound
input device 51 which accepts an input signal. An
acoustic signal detecting device 52 detects an acoustic
signal from the input signal accepted by the sound input
25 device 51. A first evaluation device 512 determines

1 whether the detected acoustic signal is a noise signal or
a speech signal. A speech dictionary 511 stores reference
feature patterns provided for a speech recognition. A
machine noise dictionary 53 stores reference noise
5 patterns provided for a noise evaluation. A speech
recognition device 513 recognizes, when the detected
acoustic signal is determined as being the speech signal,
the speech signal as being an operational request based on
the reference feature patterns from the speech dictionary
10 511. A second evaluation device 514 determines whether or
not the noise signal is acceptable based on the reference
noise patterns from the machine noise dictionary 53, when
the detected acoustic signal is determined as being the
noise signal. A noise storage device 56 stores a machine
15 noise signal. A noise storage control device 55 allows
the machine noise signal to be stored into the noise
storage device, based on a result of the determination of
the noise signal by the second evaluation device 514. A
sound output device 57 reproduces the noise signal from
20 the noise storage device 56.

 In the office information system of FIG.
34, the first evaluation device 512 carries out the
detection of a noise signal from an acoustic signal by
checking the presence of a pitch in the acoustic signal or
25 the continuous period of the acoustic signal.

1 Alternatively, the first evaluation device 512 may be
configured to determine whether or not the acoustic signal
is a speech signal by using a known speech recognition
technique. When the acoustic signal is rejected as a
5 result of the speech recognition, the first evaluation
device 512 may determine that the acoustic signal is a
noise signal.

 In the office information system of FIG.
34, the second evaluation device 514 carries out the noise
10 evaluation in the same manner as in the embodiment of FIG.
32. Suppose that reference noise patterns of "p" accepted
noise signals and reference noise patterns of "q" rejected
noise signals are stored in the machine noise dictionary
53. Further, suppose that $N(k)$ (where $k = 1, 2, \dots, l$)
15 denotes the reference noise patterns of one of the "p"
accepted noise signals from the noise dictionary 53, and
 $A(k)$ denotes the reference noise patterns of one of the
"q" rejected noise signals from the noise dictionary 53.
Suppose that the noise signal detected by the detecting
20 device 52 has a sequence of feature patterns X_i (where $i =$
 $1, 2, \dots, l$). "l" denotes the number of frames which the
acoustic signal of concern is divided into. A suitable
length of one frame is, for example, 10 msec, which is
equivalent to that used in known speech recognition
25 techniques. A suitable type of the feature vector is, for

1 example, LPC MEL cepstrum, which is widely used in known
speech recognition techniques.

5 A similarity factor $R(X, N(k))$ which
represents the magnitude of a difference between the
feature patterns X of the noise signal of concern and the
reference noise patterns $N(k)$ of one of the "p" accepted
noise signals is calculated by using the above equation
(1). In the second evaluation device 514, the similarity
factors $R(X, N(k))$ for all of the "p" accepted noise
10 signals from the noise dictionary 53 are first calculated
in the above manner. When all of the similarity factors
 $R(X, N(k))$ are smaller than a predetermined threshold
value TH1, the second evaluation device 514 determines
that the noise signal of concern is probably to be
15 rejected. In this case, the second evaluation device 514
then calculates the similarity factors $R(X, A(k))$ for all
of the "q" rejected noise signals from the noise
dictionary 53 in a similar manner. When all of the
similarity factors $R(X, A(k))$ are larger than a
20 predetermined threshold value TH2, it is finally
determined that the noise signal of concern is not
acceptable (or it is rejected). On the other hand, when
the similarity factors $R(X, A(k))$ are smaller than the
threshold value TH2, it is determined that the noise
25 signal of concern is either an accepted noise signal

1 different from those stored in the noise dictionary 53 or
a rejected noise signal different from those stored in the
noise dictionary 53.

 In the office information system of FIG.

5 34, when the noise evaluation is carried out at the second
evaluation device 514, the noise storage control device 55
allows the machine noise signal to be stored into the
noise storage device 56, based on a result of the
determination of the noise signal by the second evaluation
10 device 514. In the noise storage device 56, the machine
noise data with respect to the noise signal of concern is
stored together with the result (accepted or rejected) of
the noise evaluation. The noise storage control device 55
may be configured to allow a date and time of the
15 determination of the noise signal with respect to each
noise signal to be additionally stored into the noise
storage device 56. FIG. 35 shows an example of the noise
data stored in the noise storage device 56 of the office
information system of FIG. 34.

20 In the office information system of FIG.

34, the sound output device 57 is configured to reproduce
the noise signal from the noise storage device 56. Once
the machine noise data is stored in the noise storage
device 56, the noise signal can be reproduced by the sound
25 output device 57 from the noise storage device 56 at any

1 time. The user may input a reproduce request from a
keyboard (not shown) of the office information system, and
the sound output device 57 reproduces the noise signal
from the noise storage device 56 in response to the
5 request. Further, the date and time and the result of
evaluation with respect to each noise data may be
displayed on a display device (not shown) of the office
information system. Accordingly, the office information
system of the present embodiment is effective in providing
10 easy searching and recognition of a failure in the system
by using the result of the machine noise evaluation, and
in providing the user with an operational message that
allows efficient failure recovery in the system.

As shown in FIG. 34, in the office
15 information system of the present embodiment, the noise
storage control device 55 may be configured to allow a
label of the noise signal with respect to each noise
signal to be additionally stored into the noise storage
device 56. The speech recognition device 513 in this case
20 is configured to recognize the speech signal as being a
label registering request based on the reference feature
patterns from the speech dictionary 511. For example,
when the noise evaluation at the second evaluation device
514 results in the rejection of the noise signal and the
25 speech recognition at the speech recognition device 513

1 results in the label registering request, the noise
storage control device 55 acts to additionally store a
"failure" label with respect to that noise signal into the
noise storage device 56 as indicated in FIG. 35. Also,
5 when the result of the noise evaluation at the second
evaluation device 514 is uncertain and the speech
recognition at the speech recognition device 513 results
in the label registering request, the noise storage
control device 55 acts to additionally store a "other
10 noise" label with respect to that noise signal into the
noise storage device 56 as indicated in FIG. 35.

Further, in the office information system
of FIG. 34, when the noise evaluation device 54 determines
that the noise signal of concern is either an accepted
15 noise signal different from those stored in the noise
dictionary 53 or a rejected noise signal different from
those stored in the noise dictionary 53, it is possible to
additionally register such a new noise signal into the
noise dictionary 53. The addition of new reference noise
20 patterns or the modification of the existing reference
noise patterns in the noise dictionary 53 is possible by
training the office information system on various noise
signals.

Next, FIG. 36 is a block diagram of a sixth
25 embodiment of the office information system according to

1 the invention. The office information system of this
embodiment is applicable to copier systems, facsimile
systems or printer systems.

5 As shown in FIG. 36, the office information
system of the present embodiment includes an image
processing device 61 which prints a processed image,
obtained from an original image, on a copy sheet. A self-
diagnosis device 62 determines whether the printed image
on the copy sheet, output from the image processing device
10 61, is defective in image quality. A voice output device
63 outputs a synthesized voice when the printed image is
determined as being defective, the synthesized voice
indicating a result of the determination by the self-
diagnosis device 62.

15 In the office information system of FIG.
36, the image processing device 61 is configured to obtain
a processed image by optically scanning an original image
with a scanner and processing the image through a known
image processing technique. The image processing device
20 61 is configured to print the processed image on the copy
sheet by using toner. The self-diagnosis device 62 is
configured to determine whether the printed image on the
copy sheet, output from the image processing device 61, is
defective in image quality.

25 The determination of the printed image as

1 to the image quality is carried out by checking a level of
optical density of the entire printed image. When lack of
toner or a deterioration of a cleaner occurs in the office
information system, the level of optical density of the
5 entire printed image becomes considerably low. The self-
diagnosis device 62 is configured to check the level of
optical density of the entire printed image, and when the
level of optical density is detected to be lower than a
predetermined reference level, the self-diagnosis device
10 61 determines that the printed image is defective in image
quality. Alternatively, the self-diagnosis device 62 may
be configured to carry out a character recognition on the
printed image in a case in which the printed image
contains characters only. When the rejection rate of the
15 printed image as a result of the character recognition is
higher than a predetermined reference value, the self-
diagnosis device 62 determines that the printed image is
defective in image quality.

In the office information system of FIG.

20 36, the voice output device 63 outputs a synthesized voice
when the printed image is determined as being defective,
the synthesized voice indicating a result of the
determination by the self-diagnosis device 62. This
enables the user to easily recognize the occurrence of
25 lack of toner or a deterioration of the cleaner in the

1 system.

In the office information system of FIG. 36, the self-diagnosis device 62 is configured to predict the occurrence of lack of copy sheets in the system by using a paper sensor. The paper sensor monitors or detects the height of a stack of copy sheets placed in the system, and when the height detected by the paper sensor is smaller than a predetermined reference height (for example, 1 mm), the self-diagnosis device 62 determines that the lack of copy sheets will occur in the system. The voice output device 63 outputs a synthesized voice indicating the lack of copy sheets in the system, when the occurrence of the lack of copy sheets is determined by the self-diagnosis device 62. This is done before the copy sheets are completely consumed in the system. Hence, this enables the user to easily predict the occurrence of lack of copy sheets in the system.

Further, in the office information system of FIG. 36, the self-diagnosis device 62 is configured to predict the occurrence of lack of staples in the system by using a sensor. The sensor monitors or detects the length of staples placed in the system, and when the length detected by the paper sensor is smaller than a predetermined reference length (for example, a 10-piece length), the self-diagnosis device 62 determines that the

1 lack of staples will occur in the system. The voice
output device 63 outputs a synthesized voice indicating
the lack of staples in the system, when the occurrence of
the lack of staples is determined by the self-diagnosis
5 device 62. This is done before the staples are completely
consumed in the system. Hence, this enables the user to
easily predict the occurrence of lack of staples in the
system.

 In the office information system of the
10 present embodiment, the voice output device 63 outputs a
synthesized voice when the printed image is determined as
being defective, the synthesized voice indicating a result
of the determination by the self-diagnosis device 62. The
office information system of the present embodiment is
15 effective in providing easy recognition of lack of toner
or lack of copy sheets in the system by providing the user
with a failure-detection voice message based on the result
of the self-diagnosis of the system.

 Next, FIG. 37 is a block diagram of a
20 seventh embodiment of the office information system
according to the invention. The office information system
of this embodiment is applicable to copier systems or
facsimile systems.

 As shown in FIG. 37, the office information
25 system of the present embodiment includes a voice input

1 device 71 which accepts an input voice from a user so as
to generate an electrical signal corresponding to the
input voice. A voice recognition device 72 recognizes the
electrical signal, produced by the voice input device 71,
5 as being an operational command input to the office
information system. A command execution device 73
executes an image forming operation on the office
information system based on the operational command
recognized by the voice recognition device 72. In this
10 system, the voice recognition device 72 is configured to
recognize the electrical signal as being an operational
command which sets an operating condition change to the
image forming operation, the operating condition change
being represented by a difference between a previously-set
15 operating condition and a currently-set operating
condition.

In the present embodiment, the voice input
device 71 includes a transmitter/receiver unit (e.g., a
telephone handset) which receives an input voice from the
20 user so as to generate an electrical signal corresponding
to the input voice.

In the present embodiment, the voice
recognition device 72 is configured so as to provide an
increased operability in the setting of operating
25 conditions and operating condition changes to the image

1 forming operation being executed on the office information
system. For example, the voice recognition device 72 is
configured to recognize an electrical signal corresponding
to an input voice (for example, a spoken word "wait" or
5 "cancel") as being an operational command input to the
office information system. When the above signal is
recognized by the voice recognition device 72, the voice
recognition device 72 supplies a stop command or cancel
command as a result of the voice recognition, to the
10 command execution device 73. The command execution device
73 executes an image forming operation on the office
information system based on the operational command
recognized by the voice recognition device 72.

 Alternatively, the voice recognition device
15 72 is configured to recognize a plurality of voice
segments included in the input voice from the user, as
being respective operating conditions of an operational
command. Suppose that the office information system is
applied to a copier system and the user intends to set a
20 plurality of operating conditions to an image forming
operation to be executed on the copier system. For
example, when a sequence of spoken words "A4", "double
sided", "10 copies", "sort" and "staple" is inputted by
the user via the voice input device 71, the voice
25 recognition device 72 recognizes at a time the

1 corresponding voice segments, included in the input voice
from the user, as being the respective operating
conditions of the copying operation. In this case, the
command execution device 73 executes the copying operation
5 on the office information system based on the operating
conditions recognized by the voice recognition device 72.
It is not necessary for the user to perform the keyboard
(or another input device) operations in order to set the
operating conditions. Hence, it is possible for the
10 office information system of the present embodiment to
ensure easy operating-condition setting procedures for the
user.

As described above, the voice recognition
device 72 is configured to recognize the electrical signal
15 as being an operational command which sets an operating
condition change to the image forming operation, the
operating condition change being represented by a
difference between a previously-set operating condition
and a currently-set operating condition.

20 FIG. 38 shows a relationship between voice
inputs and stored increments in the office information
system of FIG. 37. As shown in FIG. 38, various
operating-condition increments corresponding to
predetermined voice inputs (or the spoken words) are
25 stored in a memory of the voice recognition device 72.

1 For example, when a spoken word "thicker" from the user is
recognized, a copy density increment "2" corresponding to
this word is read from the memory, and the voice
recognition device 72 sets the copy density of the copying
5 operation to a current copy density value by adding the
read increment "2" to the previously-set copy density
value. That is, the current copy density value for the
copying operation is produced by the voice recognition
device 72 by adding the stored increment to the
10 previously-set copy density value. The copying operation
is performed by the command execution device 73 based on
the operating conditions (or the current copy density
value) recognized by the voice recognition device 72.

FIG. 39 is a block diagram of a variation
15 of the office information system of the present
embodiment. In FIG. 39, the elements which are
essentially the same as corresponding elements in FIG. 38
are designated by the same reference numerals, and a
description thereof will be omitted.

20 As shown in FIG. 39, the office information
system of the present embodiment includes an operating-
condition input device 75 in addition to the elements
shown in FIG. 37. The operating-condition input device 75
is, for example, a touch panel. The operating-condition
25 input device 75 accepts a manually-indicated magnitude on

1 the operating-condition input device 75 as an operating
condition change to the image forming operation. The
command execution device 73 in this embodiment executes an
image forming operation on the office information system
5 based on a combination of the operational command
recognized by the voice recognition device 72 and the
operating condition change accepted by the operating-
condition input device 75.

FIG. 40 is a diagram for explaining an
10 operation of the operating-condition input device 75 in
the office information system of FIG. 39.

As shown in FIG. 40, the operating-
condition input device 75 is, for example, a touch panel.
Suppose that an original image contains a photographic
15 image in a photographic region "FG" of the original image,
and the photographic region "FG" is displayed on the touch
panel 75. The user inputs a photographic region change
"FG1" to the office information system by using the touch
panel 75, and, at the same time, inputs spoken words
20 "leave blank in this area" via the voice input device 71.
The voice recognition device 72 recognizes the input voice
as being an operational command which sets the
photographic region change to the image forming operation.
The operating-condition input device 75 accepts the
25 manually-indicated region change "FG1" on the operating-

1 condition input device 75 as the operating condition
change to the image forming operation.

 Hence, the office information system of the
present embodiment is effective in providing an increased
5 operability in the setting of the operating conditions and
the operating condition changes to the image forming
operation being executed on the office information system.
It is possible for the office information system of the
present embodiment to ensure easy operating-condition
10 setting procedures for the user.

 Next, FIG. 41 is a block diagram of an
eighth embodiment of the office information system
according to the invention. The office information system
of this embodiment is applicable to copier systems or
15 facsimile systems.

 As shown in FIG. 41, the office information
system 81 of the present embodiment includes an
operational event detecting device 82 which determines
whether an operational error occurs in the system by
20 detecting a plurality of predetermined operational events
in the system. A voice message device 83 outputs a voice
message based on a result of the detection of the
plurality of predetermined operational events, the voice
message being indicative of the occurrence of an
25 operational error in the system.

1 Specifically, the office information system
of the present embodiment is applied to a copier system.
In the present embodiment, the operational event detecting
device 82 detects whether a user leaves from the system,
5 whether a new user attends at the system in place of the
user, and whether a document remains on the system after
the leaving of the user or the attendance of the new user.
The voice message, output by the voice message device 83
when the document is detected as remaining on the system,
10 indicates that the document remains on the system after
the leaving of the user or the attendance of the new user.
This enables the user to easily recognize that an
operational error (or the document being left on the
system) occurs in the system.

15 Further, the office information system of
the present embodiment is applied to a copier system.
Specifically, in the present embodiment, the operational
event detecting device 82 detects whether a user leaves
from the system, whether a new user attends at the system
20 in place of the user, and whether a copy sheet erroneously
remains on the system (for example, it is left in an
ejection tray or in a sorter unit of the copier system)
after the leaving of the user or the attendance of the new
user. The voice message, output by the voice message
25 device 83 when the copy sheet is detected as erroneously

1 remaining on the system, indicates that the copy sheet
erroneously remains on the system after the leaving of the
user or the attendance of the new user. This enables the
user to easily recognize that an operational error (or the
5 copy sheet being left on the system) occurs in the system.

Further, in the present embodiment, the
operational event detecting device 82 is configured to
detect whether a reconstructed image output by the system
from an original image is defective in image quality. The
10 voice message, output by the voice message device 83 when
the reconstructed image is detected as being defective,
indicates that the reconstructed image is defective. This
enables the user to easily recognize that an operational
error (or a reconstructed image with a defective quality
15 being formed by the system) occurs in the system.

Further, in the present embodiment, the
operational event detecting device 82 is configured to
detect whether an image of a document placed on the system
is a front-side image or a back-side image. The voice
20 message, output by the voice message device 83 when the
image of the document is detected as being the back-side
image, indicates that the image of the document is the
back-side image. This enables the user to easily
recognize that an operational error (or the document being
25 erroneously placed on the system to expose the back-side

1 image of the document) occurs in the system.

Further, in the present embodiment, the operational event detecting device 82 is configured to detect whether a direction of an image of a document
5 placed on the system is equal to a direction of an image to be used in a double-sided copying mode. The voice message, output by the voice message device 83 when the direction of the image of the document is detected as being unequal to that used in the double-sided copying
10 mode, indicates that the direction of the image of the document does not match with that used in the double-sided copying mode. This enables the user to easily recognize that an operational error (or the direction of the image of the document being unsuitable to the double-sided
15 copying mode) occurs in the system.

Further, as shown in FIG. 41, the office information system 81 of the present embodiment further includes a user ID recording medium 84 in which an identification ID of a user is stored, a user ID storage
20 device 85 which stores the user ID read from the user ID recording medium when the recording medium is inserted into the system, and a previous user ID display device 86 which displays an image of the stored user ID output from the user ID storage device 85 when another user attends at
25 the system in place of the user and a different user ID

1 recording medium storing an identification of the new user
is inserted into the system.

 In the above-described office information
system 81, the user ID recording medium 84 is, for
5 example, an IC card, and in the IC card the identification
ID of the user is stored. An image of the stored user ID
output from the user ID storage device 85 is displayed by
the previous user ID display device 86. When another user
attends at the system in place of the user and a different
10 IC card, storing an identification of the different user,
is inserted into the system, the different user can easily
recognize who is the previous user of the system, by
viewing the image of the stored user ID displayed. The
office information system 81 of the present embodiment is
15 effective in providing improved man-machine interface
which allows the user to easily recognize the operational
error in the system.

 FIG. 42 is a block diagram of a variation
of the office information system of the present
20 embodiment. The office information system of this
embodiment is applicable to facsimile systems.

 As shown in FIG. 42, the office information
system 81A of the present embodiment includes an
operational history storage device 82A which stores
25 operational history records and/or document-related

1 records which are related to the system 81A. A voice
message device 83A outputs a voice message based on the
operational history records and/or the document-related
records read from the operational history storage device
5 82A, the voice message being indicative of a probability
of an operational error in the system.

Specifically, in the office information
system 81A of the present embodiment, previous destination
facsimile numbers are stored in the operational history
10 storage device 82A when the facsimile transmission for
each destination facsimile number is successfully
performed. When a destination facsimile number which does
not match with any of the previous destination facsimile
numbers stored in the storage device 82A is input to the
15 office information system 81A, the voice message device
83A outputs a voice message indicating that the newly-
input destination facsimile number does not match with any
of the previous destination facsimile numbers and it is
input to the system 81A for the first time. This allows
20 the user to easily recognize the probability of an
operational error (for example, a mistake of the input
facsimile number) in the system.

FIG. 43 is a block diagram of another
variation of the office information system of the present
25 embodiment. The office information system of this

1 embodiment is applicable to copier systems, facsimile
systems or printer systems.

As shown in FIG. 43, the office information
system 81B of the present embodiment includes an operating
5 condition storage device 82B which stores operating
conditions (for example, paper size, total copy number,
enlargement/reduction, and single-/double-sided copying
mode) related to the system 81B. A voice message device
83B outputs, prior to a start of an image forming
10 operation of the office information system 81B, a voice
message based on the operating conditions read from the
operating condition storage device 82B, the voice message
being indicative of the operating conditions of the system
81B.

15 The office information system 81B of the
present embodiment is effective in providing improved man-
machine interface which allows the user to easily
recognize the operating conditions of the system before
the start of the image forming operation of the system.

20 FIG. 44 is a block diagram of another
variation of the office information system of the present
embodiment. In FIG. 44, the elements which are
essentially the same as corresponding elements in FIG. 43
are designated by the same reference numerals, and a
25 description thereof will be omitted. The office

1 information system of this embodiment is applicable to
copier systems, facsimile systems or printer systems.

As shown in FIG. 44, the office information
system 81B of the present embodiment includes, in addition
5 to the elements 82B and 83B, a voice input device 87, a
voice recognition device 88, a temporary stop device 89,
and a timer device 90. In the present embodiment, the
voice input device 87 accepts an input voice from the user
so as to generate an electrical signal corresponding to
10 the input voice. The voice recognition device 88
recognizes the electrical signal, produced by the voice
input device 87, as being an operational command input to
the office information system 81B. The temporary stop
device 89 temporarily stops an image forming operation on
15 the office information system 81B when the voice
recognition device 88 recognizes the electrical signal as
being a predetermined stop command.

When a voice message based on the operating
conditions read from the operating condition storage
20 device 82B is outputted by the voice message device 83B,
the user who has heard the voice message sometimes notices
the necessity of a temporary stop of the image forming
operation of the system 81B. In such a case, the user
inputs a spoken word, such as "stop", "cancel" or the
25 like, to the voice input device 87. The voice recognition

1 device 88 recognizes the electrical signal, produced by
the voice input device 87, as being the predetermined stop
command input to the office information system 81B. The
temporary stop device 89 temporarily stops the image
5 forming operation on the office information system 81B.
This makes it possible for the user to have an adequate
period of time before actually pressing the stop button of
the system.

In the present embodiment, it is not
10 necessary that the voice recognition device 88 carries out
an exact voice recognition. It is sufficient that the
voice recognition device 88 roughly recognizes the
electrical signal, produced by the voice input device 87,
as being the predetermined stop command. For example,
15 when a roughly estimated probability of the input voice to
the stop command is larger than a given threshold level,
the voice recognition device 88 may recognize the input
voice as being the stop command.

Further, in the office information system
20 81B of the present embodiment, the timer device 90 is
coupled to the voice input device 87 and enables the voice
input device 87 to accept a voice input from the user only
for a given period of time after the voice message is
outputted by the voice message device 83B. The office
25 information system of the present invention is effective

1 in providing improved man-machine interface which allows
the user to easily recognize the operational error in the
system.

 The present invention is not limited to the
5 above-described embodiments, and variations and
modifications may be made without departing from the scope
of the present invention.

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